

GEOTHERMAL CLOSED LOOP MAINTENANCE, SERVICE AND REPAIR

There are 3 Pumps included on this contract, located at site 1 as indicated below.

SITE 1

Bledsoe County Correctional Complex

1045 Horsehead Road

Pikeville TN 37367

Equipment Brand / Model

3 Pumps: TACO, Model 80515

3 Pump Motors: SUPER-E, 1 CAT #EM2559T-4

GENERAL SCOPE OF CONTRACT

To provide preventive maintenance, service, repairs, and emergency service to equipment listed herein. The omission of detailed specifications does not limit the quality of service rendered and only the best commercial practices are acceptable. All work shall comply with industry guidelines. All repairs, maintenance testing and inspections must be performed in accordance with recommended procedures of the manufacturer and in a craftsman like manner.

The owner representative will be provided a hard copy of any service bulletins and/or flyers that are applicable to the equipment to be added to owner's Operational and Maintenance Manuals. Any modification from existing designed system shall be immediately approved by facility manager and notations made for the Operation and Maintenance Manuals.

The service provider will provide within 24-hour continuing information of any work or repairs on any task that is not complete. All effort will be made to provide follow-up repairs within a day after the initial visit or estimated date giving as to when repairs can be expected. Service ticket is required to be left with the owner representative upon every visit.

All bidders are strongly encouraged to make a site visit. The State of Tennessee is not responsible for errors and/or omissions in bidder pricing due to not having made a site visit.

SITE CONTACT:

Bruce Fields, Facilities Manager

Email: bruce.g.fields@tn.gov

Phone #: 423-881-62333

INSTRUCTIONS FOR BID PREPARATION

For annual/quarterly inspections, "Trip Costs" need to be included in the amounts bid. These costs cannot be billed separately when related to scheduled maintenance.

Labor Rates:

Regular time: This is for work performed between the hours of 7:00 AM and 4:00PM, Monday through Friday.

Premium time: This is for work performed any time other than "regular time", including Monday through Friday, Saturday, Sunday, and Holidays.

Trip charges: This is for service calls outside scope of inspections and is to include all travel costs and associated expenses (personnel, vehicle, fuel, etc.) per round trip. Return trips due to incomplete or unsatisfactory work shall be limited to single trip charges. No trip charges will be allowed for annual or quarterly inspections

Proof of Cost for Parts, Materials, Supplies, Equipment and Labor: All parts, materials, supplies and equipment will be billed at contractor's cost, minus any applicable sales or use tax pursuant to Tennessee code annotated section 67-6-209, plus fifteen percent (+15%) reference standard term & condition No. 40, titled "taxes". The vendor shall submit as backup documentation a copy of the original Purchase Invoice(s) as proof of cost for parts, materials, supplies & equipment. This backup documentation must accompany the job invoice order for the agency to process payment for service performed. If the vendor cannot produce a copy of the original purchase invoice as proof of cost for repair parts, materials, supplies and equipment. The State may verify current market value and if necessary adjust the job invoice to reflect fair market price. Labor charges shall be compensated for time on site. This shall be verified by the service technician signing in on the Facilities' Contractor/Visitors Log and technician's service ticket. These documents must reflect actual time spent on campus and agree. This will be required to successfully process payment of services.

Service Charges:

Inspections will be paid per contracted costs.

Pre-approved and emergency repairs will be paid per contracted costs for time, material and trip charges.

Labor Rates:

Regular time: This is for work performed between the hours of 7:00 AM and 4:00PM, Monday through Friday.

Premium time: This is for work performed any time other than “regular time”, including Monday through Friday, Saturday, Sunday, and Holidays.

Trip charges: This is for service calls outside scope of annual and quarterly inspections and is to include all travel costs and associated expenses (personnel, vehicle, fuel, etc.) per round trip. Return trips due to incomplete or unsatisfactory work shall be limited to single trip charges. No trip charges will be allowed for annual or quarterly inspections

Proof of Cost for Parts, Materials, Supplies, Equipment and Labor: All parts, materials, supplies and equipment will be billed at contractor's cost, minus any applicable sales or use tax pursuant to Tennessee code annotated section 67-6-209, plus fifteen percent (+15%) reference standard term & condition No. 40, titled "taxes". The vendor shall submit as backup documentation a copy of the original Purchase Invoice(s) as proof of cost for parts, materials, supplies & equipment. This backup documentation must accompany the job invoice order for the agency to process payment for service performed. If the vendor cannot produce a copy of the original purchase invoice as proof of cost for repair parts, materials, supplies and equipment. The State may verify current market value and if necessary adjust the job invoice to reflect fair market price. Labor charges shall be compensated for time on site. This shall be verified by the service technician signing in on the Facilities' Contractor/Visitors Log and technician's service ticket. These documents must reflect actual time spent on campus and agree. This will be required to successfully process payment of services.

SPECIFICATIONS

Contractors Qualifications, Experience and Training:

1. Shall have three (3) years experience in servicing equipment as listed.
2. Shall provide licenses if required by Federal, Industry, State or Local boards.
3. Three (3) references with contracts in effect for comparable services of a similar size and scope, with satisfactory/exceptional performance and service, may be required.

Services and Equipment:

1. The contractor must have at least one full time employee capable of receiving and acting on service call requests and dispatching service technicians during the hours of 7:00AM thru 4:00PM, Monday through Friday, plus a telephone or paging system that will be answered live all other hours of every day. An unattended answering machine or voice mail system will not be acceptable.
2. The contractor must have material, equipment, and tools to test, maintain, repair and modify all the equipment and systems to ensure that they are in operating condition at all times.

Reporting Requirements:

1. All work must be approved in writing by the Facility Manager or designee prior to starting any repair, test, or modification.
2. Contractor must furnish a written report to the Facility Manager or designee upon conclusion of each visit, whether the visit was non-emergency or emergency type.

3. All visits by service technicians must be logged on site as to date and time (in/out) by Facility Manager, facility security personnel, and/or authorized representative. It is required that all service technicians personally sign-in and sign-out to verify their presence and length of stay at the facility.

Handling of Materials:

All material, including waste and excess, used within the scope of the contract is the total responsibility of the contractor. All use, removal and disposal must be in accordance with any and all Environmental Protection Agency Regulations.

Types of Service:

1. Regular time: Service during normal business hours of 7:00AM to 4:00PM Monday through Friday. Charges to be at regular hourly rates.
2. Premium time: Services performed outside the normal business hours of 7:00AM to 4:00PM Monday through Friday, including weekends and/or holidays. Charges to be at premium hourly rates.

Service Request Procedure:

1. The contractor shall not perform any repair service without a written request from the Facility Manager, or designee.
2. Based on hourly rates, parts and trip charges, the contractor shall submit a maximum-not-to-exceed quote to the Facility Manager.
3. The Facility Manager shall submit to the contractor, a written approval for work to be performed. Transmittal shall be by mail, fax or email.

Response Time:

1. The contractor shall provide emergency service 24 hours/day, 7 days/week. An emergency response time of 4 hour(s) is required during business hours and a 4 hour response time is required after normal working hours.
2. Non-emergency (as determined by Facility Manager) response time shall be 24 hour(s) during business hours and a 4 hour response time after normal working hours.

INVOICE REQUIREMENTS

A service ticket/invoice must be left with the Facility Manager or designee after each service visit. The service ticket shall show man hours (time in – time out) and a list of all parts used. This service ticket will be required backup documentation for all payments.

The regular invoice will be submitted to the Facility Manager, listing work performed, labor costs, trip costs and costs for parts.

1. Payment is dependent upon verification of time for the service rendered plus trip costs plus the cost of parts. All required approvals from the Facility Manager must be attached to each invoice.
2. All repair parts must be billed at list prices plus 15% mark up.

PREVENTATIVE MAINTENANCE SCHEDULE for Pump & Pump Motor

6 Month Service

1. Grease Pump Motors with polyrexem

Annual Inspection

1. Change Bearings.
2. Change Casing.
3. Change Shaft Sleeve

4 Year Inspection

1. Change Impeller
2. Change Shaft

Geothermal System Bi-Monthly Water Treatment Service Maintenance

To provide a detailed sequence of maintenance and operations to ensure the integrity of the water quality of the geothermal system and its waterside components. Listed below are the objectives of the water treatment program;

- A) To minimize corrosion
- B) To minimize biological growth
- C) To keep heat transfer surfaces clean

All objectives shall be achieved with minimal water usage and minimal environmental impact and without creating a hazard to operating personnel. Chemicals used in this system must meet all local and state regulatory criteria. Non-nitrite, non-chromate additives are to be used and all material safety data sheets (MSDS) must be supplied and kept on file at point of use as well as in chemical storage areas.

Service frequency shall be a six visits over 12-month, with a target of 60-day increments. The following parameters shall be reported via computer-generated service reports on each visit;

Parameter (units)	Target Value
pH (unitless)	9.0-9.5
Copper (ppm)	0-0.20
Conductivity (microsiemens)	NA
%-propylene glycol (%)	15-17
Total Suspended Solids (ppm)	≤10
Tolytriazole (ppm)	10-15*
Total Aerobic Bacteria (CFU/mL)	≤1,000**
Makeup Water Meter Reading (gallons)	Record reading
Molybdenum (ppm)	1.0-1.5***
Corrosion Rates – Cu & Fe (mils/year)	See Chart Below

** Note 1: Laboratory analysis may be needed for “non-field” types of parameter testing such as UV digestion on tolytriazole analysis.*

*** Note 2: Bio-cultures, by nature, will require up to several days to provide useful data so that supplemental reporting may be required in addition to computer-generated service reports.*

**** Note 3: Molybdenum tracer level is product dependent and the above-mentioned ranges are the levels desired for GI-380 geothermal water treatment chemical. Systems with greater than 3% glycol must be diluted when testing due to molybdenum interference on most colorimetric instruments.*

At no time shall the two-station corrosion coupon rack not contain one copper and one mild steel (i.e. “carbon steel”) coupon for the purpose of determining corrosion rates. Coupon analysis shall strictly adhere to ASTM D2688-92 which, in part, dictates that mild steel coupon shall be placed upstream of copper coupon. Coupon analysis target analysis interval will be 60 to 90 days and results shall be expressed in units of “mils per year.” To ensure the repeatability and the uniformity of testing, the target flow rate of 5 gallons per minute will be maintained. If more than one set of corrosion coupons yields a corrosion rate of lower than the “good” category within the 12-month service increment, a meeting between water treatment contractor and maintenance department shall be called during which the water treatment contractor will provide solutions and preventative action recommendations.

Corrosion Rate (mils/year)	Carbon Steel	Copper
<i>Excellent</i>	≤0.20	≤0.10
<i>Good</i>	0.20 to 0.50	0.10 to 0.25
<i>Acceptable</i>	0.50 to 0.80	0.25 to 0.35
<i>Poor</i>	0.80 to 1.00	0.35 to 0.50
<i>Severe</i>	≥1.00	≥ 0.50

In the event that chemical addition is required to the geothermal system, the 8-gallon chemical filter-feeder will be used. The filtration media shall be 1-micron filter bags which will be provided by the water treatment contractor. No less than six filter change-outs shall be performed by contractor during the 12-month service period. Only 1-micron or finer mesh bags shall be used.

If pH is below 9.0, add non-nitrite based treatment to adjust pH back into the 9.0 to 9.5 range.

If azole residual levels fall below 10 ppm, add treatment to adjust pH back into the 10+ ppm range.

If total bacteria counts exceed 1,000 colony forming units per mL, add appropriate amount of biocide to reduce bacteria counts back below this level. Chlorine shall not be acceptable as a biocide for this system.

Estimated geothermal hydronic system volume is 190,000 gallons.

Scope of Service:

To provide services that include, maintenance, preventative maintenance, inspection and emergency repairs, inspection and repairs of Geothermal System, owned by the State of Tennessee. Services to be rendered and performed in accordance with the requirements of any State and Federal Law, and the current recommended service and repair procedures by equipment manufacturer. The owner representative will be provided a hard copy of any service bulletins and/or flyers that are applicable to the equipment to be added to owner's Operational and Maintenance Manuals. Any modification from existing designed system shall be immediately approved by facility manager and notations made for the Operation and Maintenance Manuals.

The service provider will provide within 24-hour continuing information of any work or repairs on any task that is not complete. All effort will be made to provide follow-up repairs within a day after the initial visit or estimated date giving as to when repairs can be expected. Service ticket is required to be left with the owner representative upon every visit.

Location:

Bledsoe County Correctional Complex

1045 Horsehead Road

Pikeville TN. 37367